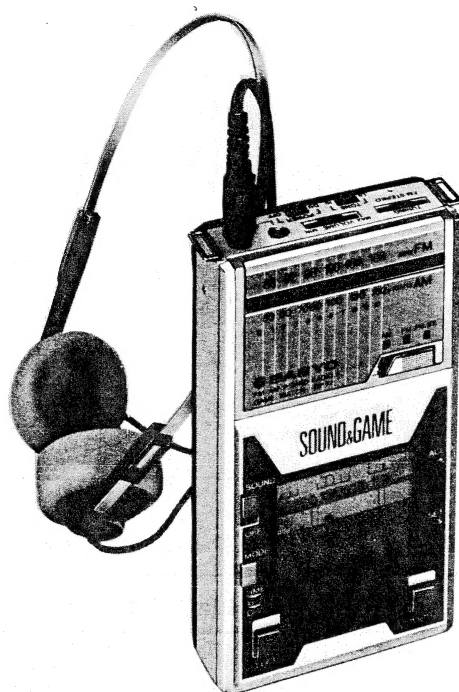


SERVICE MANUAL

FM/AM PORTABLE RADIO



RP77



SPECIFICATIONS

Frequency range:	AM: 525 — 1605 kHz FM: 88 — 108 MHz
Intermediate frequency:	AM: 455 kHz, FM: 10.7 MHz
I C:	(Part of Radio) 2
Transistor:	(Part of Radio) 10 (FET x 1)
Diode:	(Part of Radio) 10 (LED x 1)
Sensitivity:	AM 500 μ V/m (for 1mW) FM 10 μ V (S/N=30 dB)
Power source:	DC 4.5V 3 "AA" cells
Power output:	20mW max per channel
Dimensions:	3"W x 5 1/4" H x 1 1/16" D

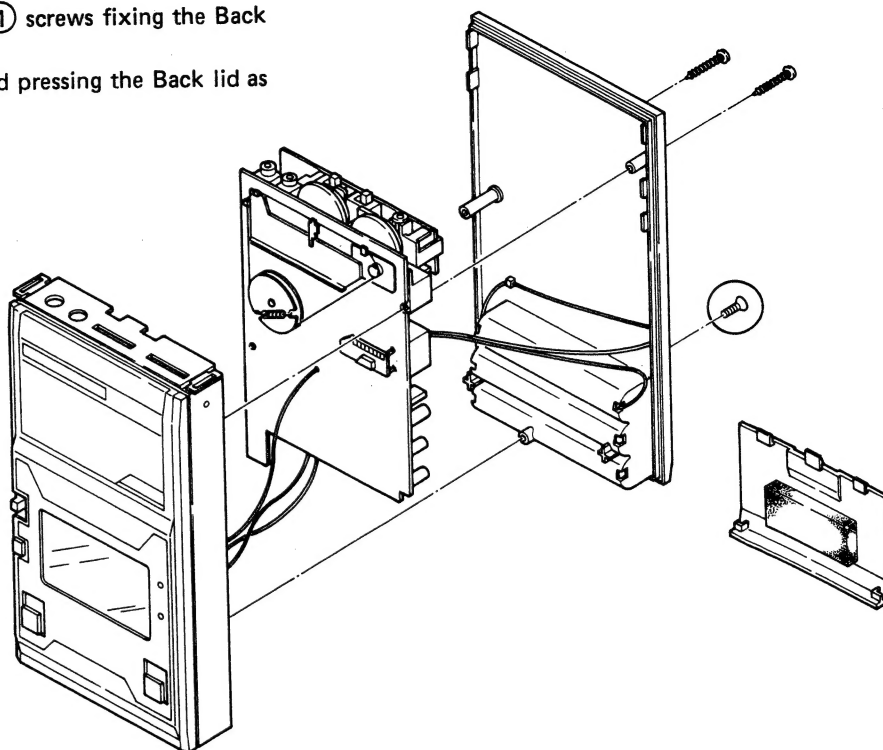
* Specifications are subject to change without notice.

WM-9627

12

HOW TO DETACH THE CABINET AND PRINTED CIRCUIT BOARD

1. Unscrew 2 Tapping screws and ① screws fixing the Back lid.
2. Detach the Cabinet by pulling and pressing the Back lid as shown figure.



PARTS LIST

Key. No.	Part No.	Description	Q'ty
PACKING			
	141-6-141T-17907	Display Carton, Set (for except USA)	1
	141-6-141T-17906	Display Carton, Set (for USA)	1
	141-6-144T-88600	Foam Plastic Case, Set	1
	141-6-317T-59500	Pad	1
	141-0-176T-06900	Band Ass'y	1
	141-6-231T-15200	Inner Poly Cover, Set	1
	141-6-231T-20201	Inner Poly Cover, Headphone	1
	4-152T-04801	Head Phone Ass'y	1
			1
CABINET ASS'Y WITH GAME			
	141-0-111T-56720	Cabinet Ass'y, with Game	1
	141-2-131T-41100	Clear Window	1
	141-2-160T-26100	Push Button, Right, Left	2
	141-2-160T-26200	Push Button, Acl, Set	2
	141-2-160T-26300	Push Button, Time, Game 1,2	1
	141-2-164T-32600	Slide Knob, Sound, Off	1
	141-2-382T-20900	Terminal, Sound, Off	1
	141-2-447T-84600	Cushion, LCD	1
	4-231T-96600	Key Board Switch	5
	4-400T-04300	Connector	2
	141-2-322T-78400	Shield Plate, LCD	1
	141-2-322T-78300	Shield Plate, LCD PCB	1
	141-4-250T-89400	P. C. Board	1
	4-970T-00900	L. C. D	1
	4-151T-40574	Speaker	1
		Special Pan. Hd. 1B Tapping Screw 2 x 6mm	6
	141-2-247T-17500	Sheet	1
	141-2-327T-28500	Insulator	1
	141-2-327T-29300	Insulator, For Shield Plate (T783)	1
	141-2-322T-79400	Shield Plate, Right	1
	141-2-322T-79500	Shield Plate, Left	1
	4-151T-42974	Speaker	1

Key. No.	Part No.	Description	Q'ty
CABINET & CHASSIS			
	141-0-126T-43200	Back Lid Ass'y	1
	141-0-128T-20400	Battery Lid Ass'y	1
	141-2-178T-04701	Bracket Band	2
	141-2-311T-43400	Chassis	1
	141-2-210T-44100	Bracket, Chassi	1
	141-2-163T-93200	Rotary Knob, Volume	1
	141-2-163T-93300	Rotary Knob, Tuner	1
	141-0-164T-31802	Slide Knob Ass'y, Band Swith	1
	141-2-538T-14600	Drum	1
	141-2-511T-25600	Pointer	1
	141-2-566T-13800	Tuning Shaft	1
	141-2-571T-22200	Bracket, Bearing Axis	1
	141-2-856T-12300	Spring Coil, Rope	1
	141-2-340T-02530	Rope, 450mm	1
FIXING PARTS			
	141-2-421T-40300	Special Screw, Back Lid	2
		Flat Hd. Tapping Screw 2.6 x 8mm, Back Lid	1
		Special Pan. Hd. 1 Screw 1.7 x 3mm, Bracket Band	4
		Special Pan. Hd. 3 Screw 1.7 x 3mm, Duram, Tuner	2
		Special Pan. Hd. 1B Tapping Screw 1.7 x 5mm, Bracket-PCB	2
		Bracket/switch PCB	
		Special Pan. Hd. 1 Screw 1.7 x 5mm, Volume	1
	141-2-415T-02400	Hexgon Nut, Tuner	1
	141-2-457T-23600	Special Washer, Tuner	1
	141-2-457T-42000	Special Washer, Tuner, Volume	2

PARTS LIST

Key. No.	Part No.	Description	Q'ty
MAIN P. C. B. ASS'Y			
	141-4-250T-75904	P.C.B. Ass'y, Main	1
	4-224T-22500	Variable Capacitor	1
	4-253T-13471	Filter, FM BPF	1
L102	4-265T-08600	V. H. F Coil	1
L103	4-265T-08700	V. H. F Coil	1
L104	4-265R-12500	V. H. F Coil	1
L105	4-257T-52300	Antenna Coil	1
L106	4-258T-40210	O. S. C Coil	1
T301	4-256T-28210	I. F. T	1
T303	4-256T-28310	I. F. T	1
T304	4-256T-28410	I. F. T	1
	4-256T-86000	IF Filter, 10.70M Red	} or 2
	4-256T-86071	IF Filter, 10.67M Blue	
CF301,302	4-256T-86072	IF Filter, 10M73M Orange	
	4-256T-86703	IF Filter, 10.64M Black	
	4-256T-86074	IF Filter, 10.76M White	}
	4-256T-81100	IF Filter, 455KHz	
CF303	4-256T-22910	I F T	1
T302	4-238T-59800	Switch, 3p	1
S101	4-220T-06500	Variable Resistor	1
VR701,901	4-222T-75075	Semi-Variable Resistor 10K ohm	1
SVR501	4-240T-30300	Socket	2
	4-253T-14823	Filter	1
L301	4-253T-14812	Filter	2
L107,108	4-253T-14819	Filter	1
L109	4-253T-14819	Filter	1
L302	4-253T-14836	Filter	1
IC301		IC μ PC1222C	1
IC501		IC LA3365	1
Q101		Transistor 2SC2787	1
Q102		Transistor 2SC2787	1
Q701,901		Transistor 2SC2785	2
Q702,902		Transistor 2SC2785	2
Q703,903		Transistor 2SA733	2
Q501		Transistor 2SC2785	1
Q103		Transistor 2SK193	1
D101,102,		Diode 1S2473	6
104,106,			
702,902			
D103		Varystor VD1221M	1
D701,901		Varystor VD1222L	2
RESISTORS			
All Resistors are Carbon V-type $\pm 10\%$ $\frac{1}{4}W$, unless otherwise noted.			
R101,103,		1K ohm, $\pm 5\%$, 1/6W	4
104,505			
R102		120K ohm, $\pm 5\%$, 1/6W	1
R105		3.3K ohm, $\pm 5\%$, 1/6W	1
R106		820 ohm	1
R107		47 ohm	1
R108,309		56 ohm	2
R109		1.8K ohm, 1/8W	1
R110		330 ohm	1
R111		470 ohm	1
R112		560 ohm	1
R302		330 ohm	1
R303		10K ohm	1
R304		560 ohm	1
R305		4.7K ohm	1
R306		2.2K ohm	1
R307		10K ohm	1
R308		33K ohm	1
R501		680K ohm	1
R502		1K ohm	1
R503		220 ohm	1
R706		5.6 ohm	1
R906		5.6 ohm, $\pm 5\%$, 1/6W	1
R705,905		10 ohm	2
R704,904		22 ohm	2
R315		120 ohm	1
R504		6.8K ohm	1
R506		470 ohm	1
R508		560 ohm	1
R509,511		3.3K ohm	2
R510,512		1K ohm	2
R701,901		100K ohm	2
R702,703,		180 ohm	4
902,903			
R515		100 ohm	1

Key. No.	Part No.	Description	Q'ty
MAIN P. C. B. ASS'Y			
	CAPACITORS		
C306		Electrolytic 220 μ F	6.3V 1
C308,311		Electrolytic 4.7 μ F	25V 2
C309		Electrolytic 0.1 μ F	50V 1
C315		Electrolytic 22 μ F	10V 1
C317,702,		Electrolytic 100 μ F	6.3V 5
902,705,			
905			
C501		Electrolytic 4.7 μ F	25V 1
C504		Electrolytic 1 μ F	50V 1
C505		Electrolytic 0.47 μ F	50V 1
C506,507		Electrolytic 2.2 μ F	50V 2
C510,511		Electrolytic 0.1 μ F	50V 2
C706		Electrolytic 220 μ F	6.3V 1
C701,901		Electrolytic 1 μ F	50V 2
C503		P P Con 1000pF $\pm 5\%$	100V 1
C114		Electrolytic 4.7 μ F	10V 1
C313	4-223T-11200	Capacitor 220 μ F	6.3V 1
C101,110,		Ceramic 0.022 μ F +80-20% 50V	3
112			
C102,103,		Ceramic 0.01 μ F +80-20% 50V	5
109,116,			
314			
C104,301,		BC Con 0.022 μ F $\pm 10\%$ 25V	5
302,303,			
304			
C105		Ceramic 18pF $\pm 5\%$ 50V	1
C106		Ceramic 7pF $\pm 0.25pF$ 50V	1
C107		Ceramic 30pF $\pm 5\%$ 50V	1
C108		Ceramic 330pF $\pm 10\%$ 50V	1
C117		BC Con 0.01 μ F $\pm 10\%$ 25V	1
C312,316		Ceramic 220pF $\pm 10\%$ 50V	2
C310,514,		BC Con 0.047 μ F $\pm 10\%$ 25V	3
515			
C502		BC Con 0.022 μ F $\pm 10\%$ 25V	1
C509,508		BC Con 0.015 μ F $\pm 10\%$ 25V	2
C512,513		Ceramic 0.0033 μ F $\pm 10\%$ 50V	2
C703,903,		Ceramic 0.0033 μ F $\pm 10\%$ 50V	4
707,907			
C704,904		Ceramic 0.01 μ F +80-20% 50V	2
C100,307		Ceramic 100pF $\pm 10\%$ 50V	2
C120		Ceramic 20pF $\pm 10\%$ 50V	1
C111		Ceramic 10pF $\pm 5\%$ 50V	1
C113		Ceramic 15pF $\pm 5\%$ 50V	1
C118		Ceramic 0.001 μ F $\pm 20\%$ 50V	1
C115		Ceramic 4pF $\pm 0.25pF$ 50V	1
C121		Ceramic 2pF $\pm 0.25pF$ 50V	1
C708		Ceramic 0.001 μ F $\pm 20\%$ 50V	1
SWITCH P. C. B. ASS'Y			
	141-4-250T-89600	P.C.B. Ass'y, Switch	1
S102,103	4-238T-64900	or Switch, 2p	2
	4-238T-52900		
Q704		Transistor 2SA1175	1
D501		LED SLP114B Red	1
D704		Zener Diode RD3.6E L1	1
D703		Diode 1SS53	1
RESISTORS			
All Resistors are Carbon V-type $\pm 10\%$ $\frac{1}{4}W$, unless otherwise noted.			
R507		470 ohm, P-type	1
R707		270 ohm, 1/6W	1
R708		15K ohm, 1/6W	1

TUNER ADJUSTMENT

MW ADJUSTMENT

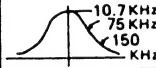
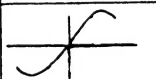
Set the DC4.5 Speaker Impedance is 32 ohms

Step		Adjusting Circuit	Connections		SG Frequency	Position of tuning dial	Adjustment	VTVM Oscilloscope
			Input	Output				
1		I.F.T.	Connect sweep generator to Test Loop	Connect oscilloscope to R306(H) & TP-6(E)	455 KHz 470 KHz (UK)	Low end of dial scale. At position of unrequired signal.	T303, T302	MAX.
2		OSC	Connect AM SG to Test Loop	Connect VTVM to speaker terminals.	517 KHz (400 Hz 30% modulation)	Low end of dial scale	L106	MAX
3					1650 KHz (400 Hz 30% modulation)	High end of dial scale	VCT-4	
4		ANT.	Connect AM SG to Test Loop	Connect VTVM to speaker terminals.	600 KHz (400 Hz 30% modulation)	600 KHz on dial scale	L105	MAX
5					1400 KHz (400 Hz 30% modulation)	1400 KHz on dial scale	VCT-3	
6		Repeat adjustments						

PREPARE: 1. Set the dial pointer to very left line of dial scale.
2. Connect sweep generator, AM SG, VTVM and oscilloscope.

3. Selector switch to "MW"
4. Use a screwdriver with plastic grip for all adjustments.

FM ADJUSTMENT

FM ADJUSTMENT							
Step	Adjusting Circuit	Connections		SG frequency	Position of tuning dial	Adjustment	VTVM Oscilloscope
		Input	Output				
1	I.F.	Connect sweep generator to TP-1 (H) & TP-2 (E)	Connect oscilloscope to TP-4 (H) & TP-6 (E)	10.7 MHz (0% modulation)	Near max. capacity of VC. at position with unrequired signal.	T301	
2	Ratio Det.		Connect oscilloscope to TP-4(H) & TP-6(E)			T304	
3	O.S.C.	Connect FM SG. to test point TP-1(H) & TP-2 (E)	Connect VTVM to Speaker terminal.	87 MHz (400 Hz 30% modulation)	Low end of dial scale	L103	MAX.
4				109 MHz (400 Hz 30 % modulation)	High end of dial scale	VCT-2	
5	ANT.	Connect FM SG. to test point TP-1(H) & TP-2 (E)	Connect VTVM to speaker terminal	90 MHz (400 Hz 30% modulation)	90.0 MHz on dial scale	L102	MAX.
6				106 MHz (400 Hz 30% modulations)	106.MHz on dial scale	VCT-1	
7	Repeat adjustments.						

PREPARE: 1. Set the dial pointer to very left line of dial scale.
2. Connect sweep generator, FM SG, VTVM and oscilloscope.
3. Use a screwdriver with plastic grip for all adjustments.
4. Use a FM antenna dummy impedance is 75 ohm.

ADJUSTMENT OF FM MULTIPLEX

This adjustment should be done after adjustment of FM tuner.

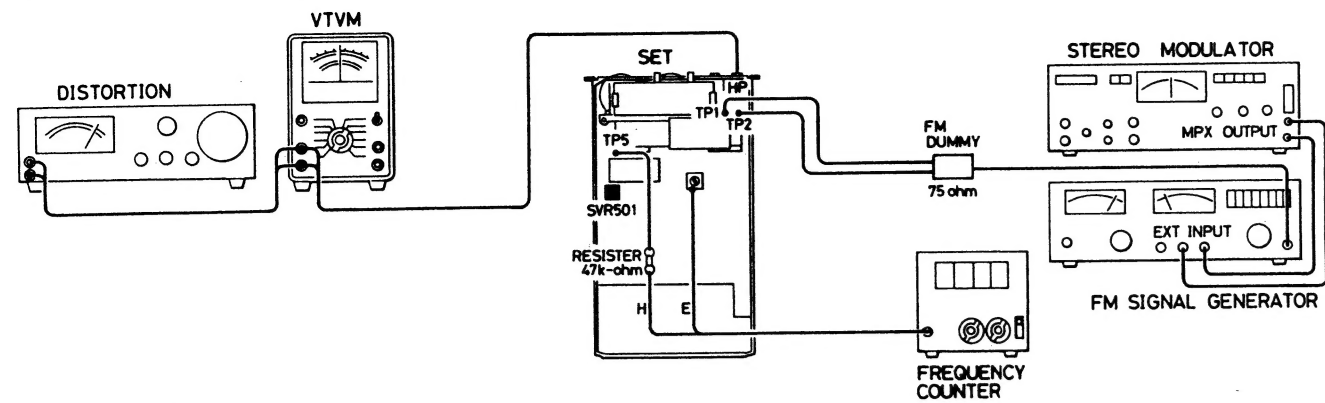
Carrier signal modulation frequency: 1000 Hz ± 22.5 kHz dev. (30% Modulation)

Pilot signal (19 kHz): ± 7.5 kHz dev. (10% Modulation)

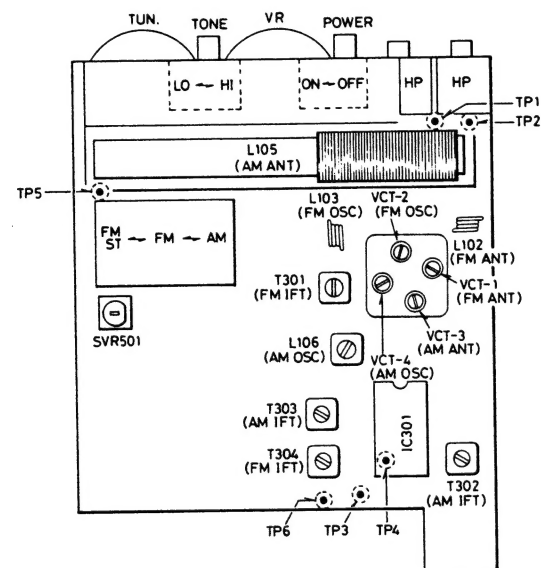
Adjustment	Tuning frequency	Connection method of instruments		Freq. of sig. gen.	Adj. point	Target value	Method of adjustment
		Input side	Output side				
VCO (19 kHz)	98 MHz	Connect hot side of FM-SG to TP1, earth side to TP2.	Connect hot side of freq. counter to TP-5 earth side to IFT Case.	98 MHz	SVR501	19 kHz ± 100 Hz	(1) In FM stereo mode, set output of FM-SG to 60 dB, and tune in. (2) * Adjust with no modulation.
Separation	98 MHz		Connect VTVM and oscilloscope to output speaker terminals, adjust volume control to standard output in both L and R channels.	98 MHz	Nothing only Confirm	Balance in L and R channels, 1,000 Hz: above 20dB	(1) In FM stereo mode, set FM-SG to 60 dB, and tune in. (2) With tone controls at MIN and balance control in the center, adjust volume control to standard output. (3) By changing over the channels* on stereo modulator, adjust the leakage current of opposite channel to minimum.

* "No modulation" means to set MAIN & SUB signal and PILOT signal of stereo modulator to "OFF" position.
* When changing over the channels, exchange the connections of the external speaker terminals at the same time.

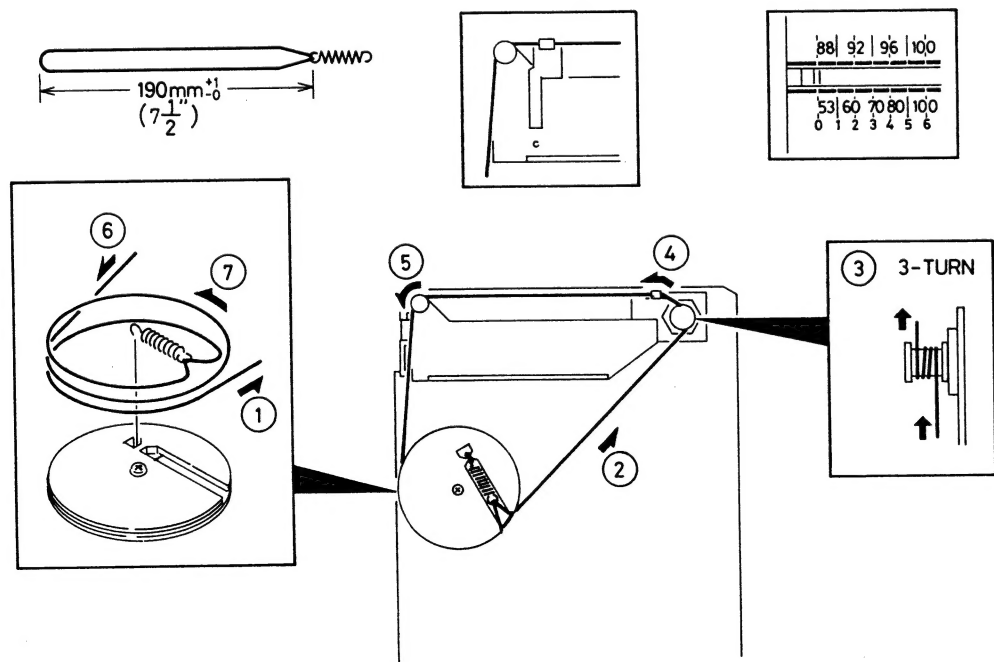
ADJUSTMENT



PART LOCATION

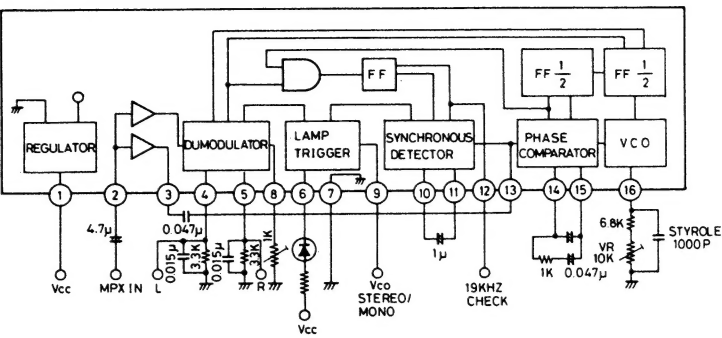


DIAL CORD STRINGING

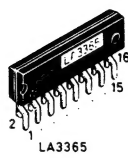
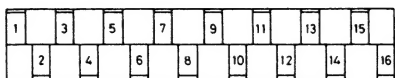


IC BLOCK DAIGRAM

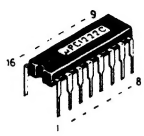
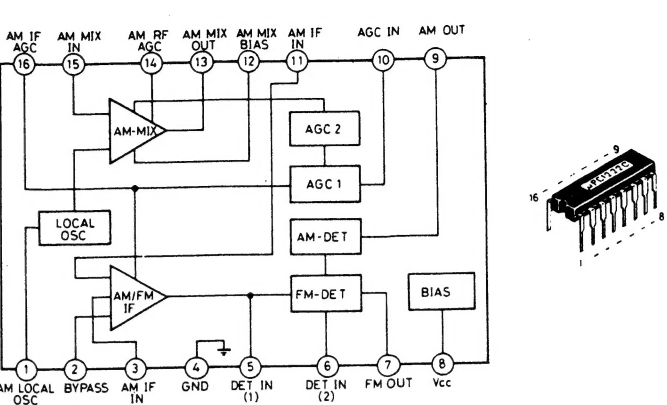
LA - 3365 (PLL FM-PX STEREO DEMODULATOR)



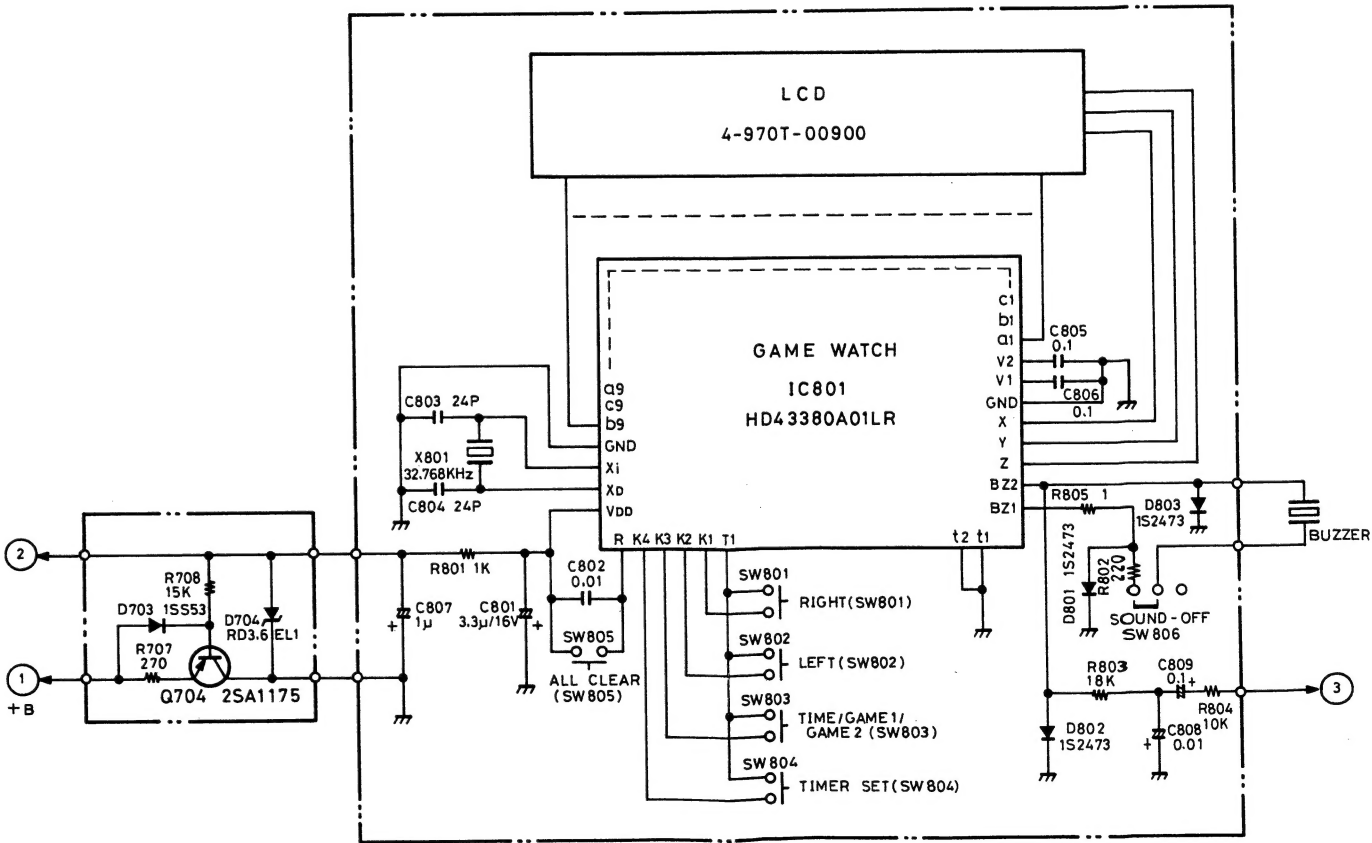
BOTTOM VIEW



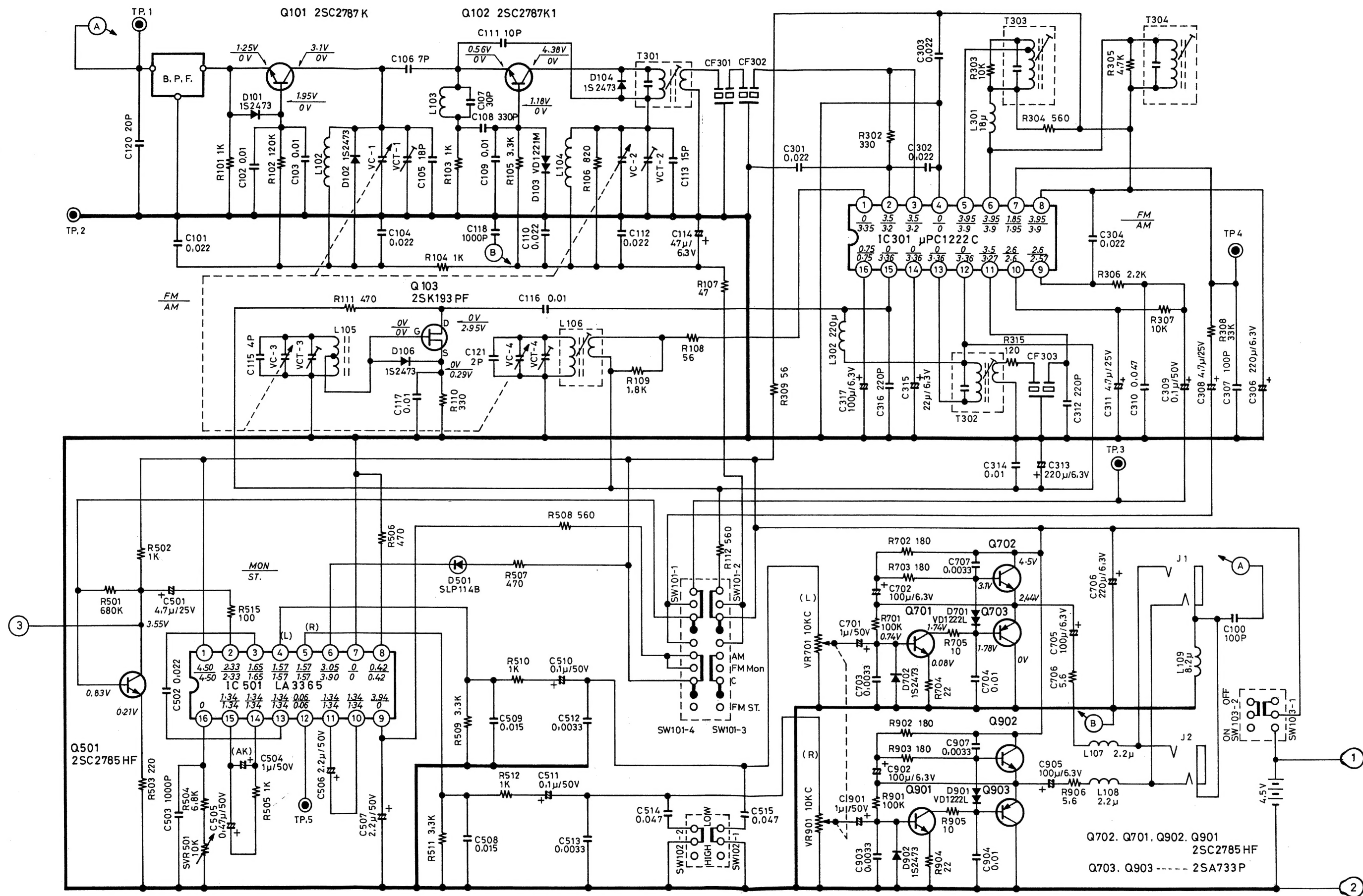
μPC1222C (AF FM IF AMP)

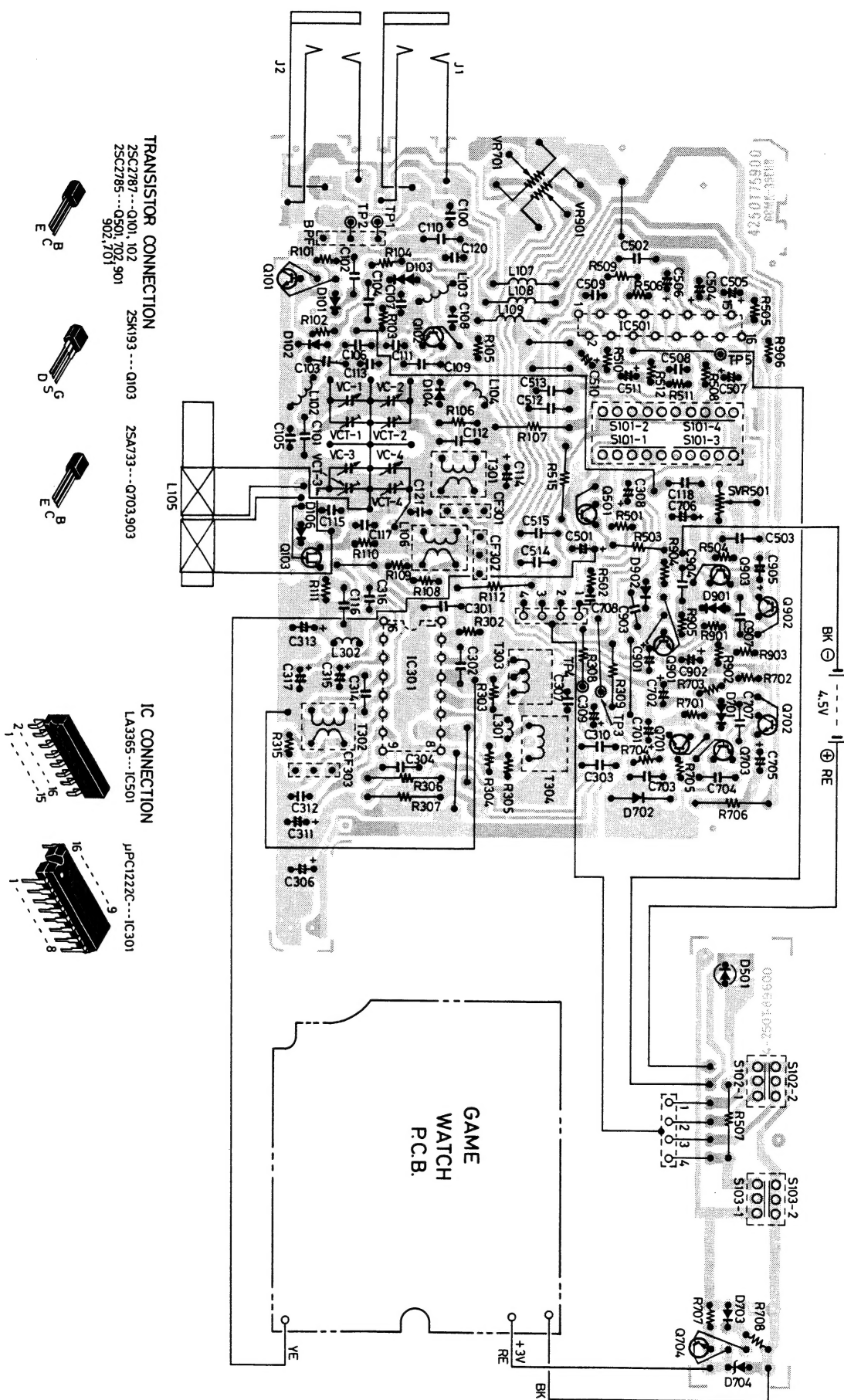


GAME WATCH & SWITCH PCB SCHEMATIC DAIGRAM



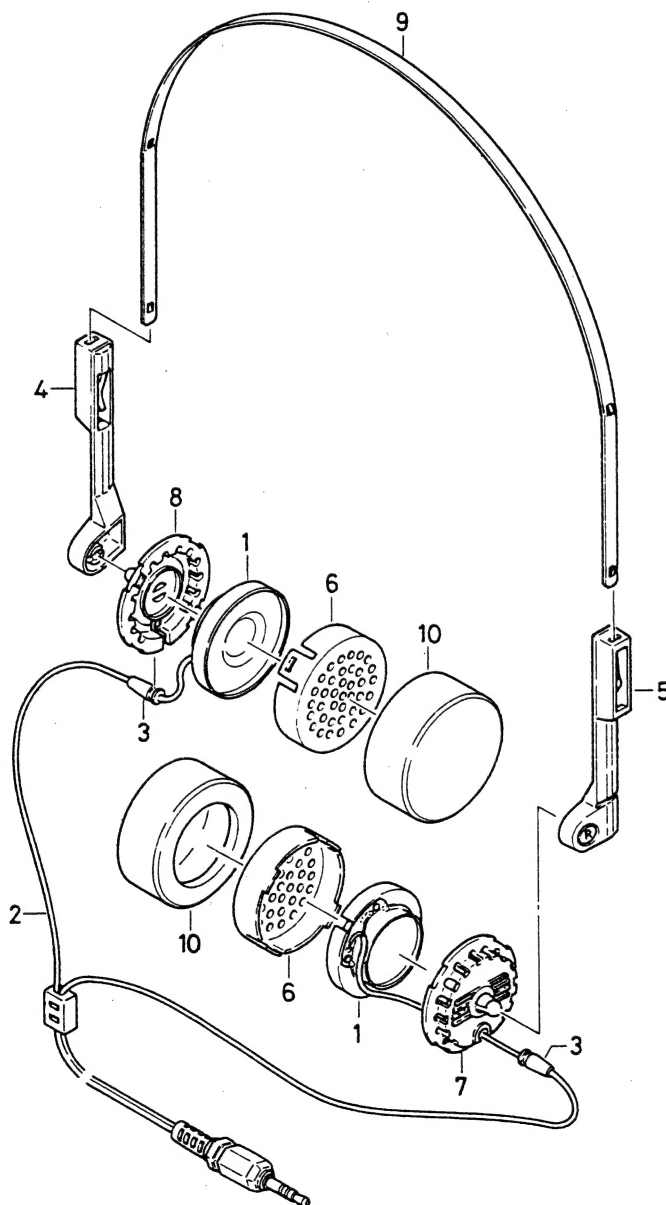
SCHEMATIC DAIGRAM





PARTS LIST & EXPLOIDED VIEW

Key. No.	Part No.	Description	Q'ty
HEAD PHONE P. C. B. ASS'Y			
1	4-151T-43900 4-243T-23700 4-243T-23771	Speaker Lead Cord Lead Cord	2
2	4-243T-25471 4-243T-23772 4-243T-26300	Lead Cord Lead Cord Lead Cord	1
3	141-2-743T-08201	Arm, Right	1
4	141-2-743T-08101	Arm, Left	1
6	141-2-210T-44800	Bracket	2
7	141-2-210T-44900	Bracket	1
8	141-2-210T-44901	Bracket	1
9	141-2-172T-03400	Hanger	1
10	141-2-180T-00300	Ear Pad	2



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